

7

outer periphery thereof. The second receiving groove **363** receives a portion of the outer periphery of the large diameter portion **331**. The second receiving groove **363** has a round bottom corresponding to the outer periphery of large diameter portion **331**. The fastening shaft **362** is coupled to the stepped portion **371** of the fastening piece **370**. The fastening piece **370** is formed with a plurality of fastening holes **372**, and is fastened to the folder by means of a fastener, such as a screw (not shown).

Preferably, the cam portion **361** and the fastening shaft **362** are linearly and cylindrically extending. A diametric center of the cam portion is preferably offset from a diametric center of the fastening shaft. In other words, the diametric center of the cam portion **361** does not coincide with that of the fastening shaft **362**. The auxiliary center shaft **330** and the second main center shaft **360** shown in FIG. **9** correspond to the state shown in FIG. **1**. The auxiliary center shaft **330** and the second main center shaft **360** shown in FIG. **10** correspond to the state shown in FIG. **3**. The auxiliary center shaft **330** and the second main center shaft **360** shown in FIG. **11** correspond to the state shown in FIG. **2**.

When the second main center shaft **360** is rotated around the second hinge axis **A2** to about 160° , the state shown in FIG. **9** changes into the state shown in FIG. **10**. Additionally, when the second main center shaft **360** is rotated around the first hinge axis **A1** to about 180° , the state shown in FIG. **9** changes into the state shown in FIG. **11**.

With the above description, the exemplary embodiment of the present invention opens the folder in two directions so that the user may conveniently see the information or input the data in relation to the conventional device.

While the invention has been shown and described with reference to certain preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A biaxial hinge device for a mobile terminal including a body and a folder folded on or unfolded from the body, the biaxial hinge device comprising:

a first hinge module for rotatably connecting the folder to the body around a first hinge axis; and

a second hinge module for rotatably connecting the folder to the body around a second hinge axis that is spaced apart from the first hinge axis and disposed in a direction substantially perpendicular to the first hinge axis, a portion of the second hinge module being inserted in the first hinge module, and the second hinge module slides in the first hinge module in cooperation with each other.

2. The biaxial hinge device as claimed in claim **1**, wherein the first hinge module includes

a main hinge housing fastened to the body;

a first main center shaft inserted in the main hinge housing in an axial direction of the first hinge axis;

an auxiliary center shaft inserted in the first main center shaft; and

hinge members sequentially inserted around the first hinge axis onto the auxiliary center shaft for providing opening and closing forces.

3. The biaxial hinge device as claimed in claim **2**, wherein the first main center shaft includes

a large diameter portion having a cutaway portion circumferentially formed on an outer periphery of the first main center shaft at a desired angle, a first opening elongated

8

along the first hinge axis, and a second opening vertically elongated from the first opening at the cutaway portion; and

a small diameter portion coaxially extending from the large diameter portion.

4. The biaxial hinge device as claimed in claim **3**, wherein the first and second openings are in communication with each other.

5. The biaxial hinge device as claimed in claim **2**, wherein the auxiliary center shaft includes

a large diameter portion; and

a small diameter portion linearly and coaxially extending from the large diameter portion for receiving the hinge members, and having a substantially D-shaped cut-out portion proximal one end thereof.

6. The biaxial hinge device as claimed in claim **5**, wherein the large diameter of the auxiliary center shaft is formed with a first receiving groove on an outer periphery thereof.

7. The biaxial hinge device as claimed in claim **2**, wherein the hinge members include

a hinge cam received in the main hinge housing;

a hinge shaft disposed opposite to the hinge cam and performing camming operations; and

a hinge spring closely contacting the hinge cam and the hinge shaft.

8. The biaxial hinge device as claimed in claim **1**, wherein the second hinge module includes

a second main center shaft accommodated in the first hinge module; and

a fastening piece fastened to an end portion of the second main center shaft.

9. The biaxial hinge device as claimed in claim **8**, wherein the second main center shaft includes

a cam portion slidingly contacting the first hinge module; and

a fastening shaft linearly and integrally extending from one side of the cam portion.

10. The biaxial hinge device as claimed in claim **9**, wherein the cam portion is formed with a second receiving groove on an outer periphery thereof.

11. The biaxial hinge device as claimed in claim **9**, wherein a diametric center of the cam portion is offset from a diametric center of the fastening shaft such that the diametric centers of the cam portion and the fastening shaft are not axially aligned.

12. The biaxial hinge device as claimed in claim **8**, wherein the fastening piece is connected to the folder.

13. A biaxial hinge device for a mobile terminal including a body and a folder folded on or unfolded from the body, the biaxial hinge device comprising:

an auxiliary center shaft for rotatably connecting the folder to the body around a first hinge axis, an outer periphery of the auxiliary center shaft being formed with a first receiving groove; and

a second main center shaft for rotatably connecting the folder to the body around a second hinge axis that is spaced apart from the first hinge axis and disposed in a direction substantially perpendicular to the first hinge axis, an outer periphery of the second main center shaft being formed with a second receiving groove, and the second main center shaft receives a portion of the auxiliary center shaft in cooperation with each other.

14. The biaxial hinge device as claimed in claim **13**, wherein the first receiving groove accommodates a desired region of the outer periphery of the second main center shaft,